Institution: Goldsmiths, University of London		
Unit of Assessment: 11, Computing		
Title of case study: WinkBall: Supporting well-being by connecting people through video		
Period when the underpinning research was undertaken: 2001-present		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
James Ohene-Djan	Senior Lecturer	2000 - present
Period when the claimed impact occurred: 2014-2020		
Is this case study continued from a case study submitted in 2014? Y		

1. Summary of the impact

Research at Goldsmiths provides the underlying technology for WinkBall: a commercial video platform that includes the facility to embed QR codes directly into videos. Working with social care providers to support the nation's well-being, especially during the COVID-19 pandemic, tens of thousands of people have benefitted from improved access to mental health support via WinkBall systems and QR-based physical interventions aimed at preventing suicide in young men; providing free access to stress relief for NHS workers and support for parents and expectant parents via hundreds of screens in NHS hospitals and surgeries. In addition, 30 unemployed young people in Brent, more than 100 (predominantly BAME) young journalists, pools of freelance journalists, staff members and contractors have gained new skills and experiences whilst working with WinkBall.

2. Underpinning research

Ohene-Djan's research into adaptive intelligent hypermedia led him to develop what may be the first formal specification and definition framework to contain a complete set of functions for personalisable, adaptive hyperlink-based user interaction in web-based systems **[R1].** The formalisation encompasses an architecture, data model, manipulation language and a set of interaction modes specifying complex user interactions with video. This formalisation is the foundation for a family of commercial tools.

Some of these systems are informed by research in interactivity, particularly for groups with particular needs. For example, in 2010 Ohene-Djan worked with Deafax, the deaf advocacy charity, to develop a new online video sharing platform, ViewTalk, for people with hearing impediments. ViewTalk allows users to record and post video blogs, conduct video conversations, participate in sign-language based role play and hosts specially developed current affairs videos. The system is built on research on the particular requirements for deaf users and the incorporation of sign language in video systems **[R2]**. But Ohene-Djan's main research trajectory is an applications-based one, in which new formalisations, concepts and technologies are devised and developed to meet new demands brought about by changes in media type and technology and increased demands for speed, security and scalability.

For example, Viewtalk required innovations in structures for organising digital video content to meet the requirements of fast, smooth communications between users. These structures are the subject of a Patent for Video Communication System **[R3].** The ViewTalk system expanded to form the basis of WinkBall, a much larger commercial system that included multiple streaming channels for multiple communities. The quantity of material that needed to be housed on the Winkball system (over 3 million videos), highlighted issues of scalability. Ohene-Djan added capacity to the WinkBall system through innovations to the software architecture and particularly through the development of a novel multi-processing video transcoding system that encodes video from a range of sources and formats. This architecture protects user content while serving up to 200 videos per second. Ohene-Djan's research findings were tested through a series of real-world deployments, including the 2010 FIFA World Cup in South Africa when 100,000 real-time WinkBall users, from 40 different countries, simultaneously accessed over 80,000 videos recorded and uploaded during the tournament. The test was a success and having established

its viability, the Winkball storage solution developed by Ohene-Djan became the subject of a second Patent for Content Distribution System, registered in 2012 **[R4].**

The Winkball system has been adapted for use in schools **[R5]** and in the last 5 years, Ohene-Djan and Winkball have made fundamental advances in the use of QR codes to integrate the video world of Winkball with the physical world and with digital sources of information. Ohene-Djan's bespoke technology combines QR codes with an adaptive engine to produce user and system driven personalisation of interactions with video content. The QR Video codes create a vital bridge for digital services that are otherwise complicated to access, extending the concept of weblinks by linking to a variety of objects and information sources. While this work is too commercially sensitive to be in the public domain, it is described in an in-house white paper and Winkball's submission to the UK government a part of its Research & Development Tax Relief Claim **[R6].**

3. References to the research

R1. Ohene-Djan, James and Fernandes, A. 2002. Modelling Personalisable Hypermedia: The Goldsmiths Model. *New Review of Hypermedia and Multimedia*, 8(1), pp. 99-137.
R2. Ohene-Djan, James, Gorle, M.; Naqvi, S. and Zimmer, Robert. 2003. A personalisable electronic book for video-based sign language education. *Educational Technology & Society*, 6(4), pp. 86-99.
R3. Patent for Video Communication System; Inventors: Duncan Barclay, James F. Ohene-Djan. Pub. No.: US 2012/0017254 A1, Pub. Date: Jan. 19, 2012. SPC Class: 725115, PCT No. PCTGB09/51343
R4. Patent for Content Distribution System; Inventors: Duncan Barclay, James F. Ohene-Djan. Pub. No.: US 2012/0188331 A1, Pub. Date: Jul. 26, 2012. IPC8 Class: AH04N715FI, USPC Class: 348 1408, PCT No. /GB2010/05129
R5. Ohene-Djan J (2010). "Winkball for Schools: An Advanced Video Modelling Technology for Learning Visual and Oral Communication Skills". In *Proceedings of the 2010 10th IEEE International Conference on Advanced Learning Technologies (ICALT '10)*, 687-689. IEEE Computer Society, Washington DC, USA.
R6. Independent Global Reporter Network Ltd, (IGRN) report to HM Government (2020)

*All outputs available on request

4. Details of the impact

WinkBall is a commercial video sharing platform originally established by Ohene-Djan and Duncan Barclay (Telegraph Group) in 2009 and, after a brief hiatus, restarted in 2016 with a new name (Independent Global Reporter Network, IGRN). A novel architectural model and system patented by Barclay and Ohene-Djan **[R3 and R4]** provides the speed, security and robustness required to host over 3 million videos which are accessed by up to 100,000 concurrent users **[S1].** According to Barclay, this technological flexibility gives WinkBall its main advantage; 'we have the scope to pivot quickly to remain at the forefront of technological innovation in a way that is rare in media/technology companies.'

Since 2016, WinkBall has worked with over 60 clients and companies and attracted GBP3,000,000 of investment, which it has used to support the economy of South-East London through the employment of free-lance journalists and as of 2018/19, 10 full-time staff members and 18 contractors **[S2, S3].** Employment opportunities generated by WinkBall provide aspiring journalists with new skills and improved employment prospects through a paid training scheme. Between April 2018-March 2020 Winkball trained and employed over 100 young people – from the UK (predominantly BAME), India, South Africa, France and the US as video news reporters **[S3, S4].** Creating over 3,000 video news reports, these 'new storytellers for local businesses and events' (James Smith, London Confederation of British Industry) cite the positive effects of this experience on their career prospects: '[Winkball] allowed me to present and earn money at

the beginning of my career - not many companies can say they take a chance on new talent… whilst paying you at the same time! I love working for them' **[S5].**

Improving the lives of vulnerable people and hard to reach communities by enabling access to essential resources: Since 2016, WinkBall has embarked on a series of impactful collaborations with charitable organisations and local authorities, social care and health care providers which have in turn benefitted vulnerable people by helping them access vital support and resources at times of need. The social and wellbeing benefits associated with the application of WinkBall video platforms are exemplified through a selection of information-sharing projects, described here:

Enabling people with pandemic-induced mental illness to access help: In response to the COVID pandemic, and concerns that traditional social media and webpages do not provide people with mental health problems safe, appropriate or accurate support and information, the mental health charity *Mind* worked with WinkBall to create a system with a QR-Video solution that 'offers anyone, including those who may be physically vulnerable, a socially-distanced form of support.' Launched in April 2020 the site is a major resource used by primary and secondary schools throughout Hammersmith and Fulham boroughs, and attracts approximately 3,000 independent visitors a month. A representative of *Mind* confirmed, 'Mental health sufferers have benefitted from bespoke video content and embedded QR codes that have given users quicker and easier access to the support they need' **[S6a]**.

In response to an increase in severe mental health issues related to the pandemic and lockdown**,** *Mind* and Winkball launched a second project later in 2020 which involved distributing dynamic video QR codes throughout Nottinghamshire to act as points of salvation to those in times of crisis. Aimed at preventing suicide for young males, this was the first time such a method had been employed as an intervention technique **[S6b].**

Covid-19 Carers benefit from training and support: Providing free transcendental meditation training to prisoners, veterans, and underprivileged children and young adults throughout the US and the UK, Deidre Parsons, Executive Director of The David Lynch Foundation confirms that WinkBall technology was 'crucial to the success of their 2019 *Help the Healers* Campaign' helping them meet their target of one million users. *The David Lynch Foundation*, approached Winkball again in 2020 to support frontline NHS workers dealing with the Covid pandemic. The new site has been visited by over 6,000 NHS workers***;*** Parsons' confirms; 'Under Dr Ohene-Djan's guidance the app has developed to be a tool useful far beyond our original plan, enabling us to expand our ability to measure the Transcendental meditation programme on a large scale' **[S7].**

Improving the lives of people in Brent and increasing young people's job prospects: In 2020, Winkball was commissioned by Brent Council to create a communication platform called *Brent Wellbeing TV* to host newsletters and information leaflets in multiple languages. Augmented by Winkball's QR video code technologies, Sarah Hawken, Health Improvement Manager at Brent, states that; 'The technology developed by Dr James Ohene-Djan enabled us to create several internet television channels that enable us to publish content and provide resources at the touch of a button. Due to the nature of the technology used, we hope that it will enable us to reach a wide variety of people within the borough and to connect with many hard to reach groups. The project will be improving the lives of people in Brent' **[S8].**

In July 2020 Brent Council worked again with WinkBall on a project called Football Fever TV which aimed at improving the employability prospects for young people. Brent Council has the 6th highest unemployment rate of the 33 London boroughs and the project set out to prepare unemployed people, principally young people, for careers in football coaching and reporting. Winkball created a mobile app and video platform for the project, which was supported by Middlesex FA and QPR, members of the programme had the opportunity to gain qualifications and cascade the benefits of the programme through a 12-week of football training programme for young people in Brent **[S8].** Sarah Hawken, Health Manager of Brent Council praises the

project, highlighting the usefulness of the technology*:* 'The technology provided for the creation of news reports for the young people is particularly unique and provides features that we could not find in any other software… The project will be providing employment opportunities and improving the lives of young people in Brent' **[S8].** Thirty young people are currently registered on the project and Hawken cites the particular benefits of Winkball software: 'It has enabled us to reach a wide variety of people within the borough and also to connect with many hard to reach groups.'

Supporting expectant and new parents: New and expectant parents cannot always find the resources they need to maintain and protect their and their baby's health. This is particularly true of parents who are not fluent speakers of English. Since 2019, Nowbaby and WinkBall's software development team have worked closely to develop an Internet television platform, Nowbaby.tv, to broadcast medical information, antenatal and postnatal products, information and services which can be accessed at home over the internet and is broadcast in NHS hospitals. **[S6d].** NowBabyTV provides a range of advanced TV features such as on-screen QR codes, data access and linking, interactive on-screen data collection, dynamic links and context sensitive banners. Launched in February 2020, Nowbaby.tv is broadcast on 324 television screens in waiting rooms in 136 NHS hospitals in England and Wales**.** David Salem, the director of NowBaby said: 'We believe this technology will have a great impact on the information accessed and understood by people … for whom English is not a first language as they often find searching online for the right information difficult and often prohibitive' **[S9]**.

Reassuring patients who need medication: Patients, particularly vulnerable patients, can feel baffled by the world of medicine and end up suspicious of medication, possibly refusing vital treatment. Winkball has been working with Central North West London (CNWL) NHS Foundation to provide natural, engaging, reassuring access to information with the aim of giving patients a sense of control of their treatment, leading to greater confidence **[S10a].** The next step is to incorporate QR video codes, linking medicine packaging with live interviews with a pharmacist. The system is also used by NHS staff members to help them choose the right medicines and ensure they are correctly administered. Anshu Rayan, Deputy Chief Pharmacist (CNWL) stated: 'Our Belief and goal is to create confidence in medicines. This maximises the patient journey and patient care/treatment; it will also empower our staff to guide and support patients about medicines' **[S10b].**

5. Sources to corroborate the impact

S1. Evidence of outreach and range of WinkBall news channels: WinkBall website
S2. Evidence of WinkBall's client base, 2020.
S3. Evidence of company background and investments: Report – Independent Global Reporter Network (IGRN) to HM Government, (March 2020).
S4. Evidence of job creation and sustainability: list of WinkBall employees, contractors and reporters, April 2018-March 2019 and April 2019 – March 2020.
S5. Evidence of benefits to reporters and industry: Testimonials from former WinkBall reporters now employed in the media.
S6. Evidence of benefit to clients and end users, Mind: a) Testimonials from Mind; b) Presentation Mind TV. [Grouped Source]
S7. Evidence of benefit to clients and end users, Testimonial from David Lynch Foundation.
S8. Evidence of benefit to clients and end users, Testimonial from Brent Council.
S9. Evidence of benefit to clients and end users, Director of Nowbaby.
S10. Evidence of benefit to clients and end users in medical settings: a) Presentation Central North West London (CNWL) NHS Health Foundation; b) Testimonial Deputy Chief Pharmacist, CNWL NHS Foundation Trust. [Grouped Source]